

Contribution to the tribe Brachinini (Coleoptera: Carabidae) - III. Six new species of genus *Brachinus* from S. E. Palaearctic and Oriental region

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Abstract. Six new species, *Brachinus fukienensis* sp. n., *B. hubeiensis* sp. n. and *B. turnai* sp. n. from China, *B. cychroides* sp. n. from Vietnam, *B. bolovenensis* sp. n. from Laos and *B. pelengensis* sp. n. from Indonesia, are described and illustrated. Male genitalia of holotypes are illustrated (except *B. cychroides* sp. n.).

INTRODUCTION

The last complete revision of the tribe Brachinini was published by Chaudoir (1876). A checklist with distribution of species from Oriental region was published by Andrewes (1930). A work aimed at the S. E. Palaearctic and Oriental region was published later by Jedlička (1964), but it included only a part of species. In China, the genus *Brachinus* Weber, 1801 is represented by 10 species (Hrdlička, 2003), in Vietnam 5 species (Park, Trac & Will, 2006), in Laos 2 species, in Indonesia 5 species.

MATERIAL AND METHODS

Type material was taken from author's collection. Photos of specimens used for the redescriptions were provided. Each paratype has its own number. Exact label data are cited for the type material, separate lines on labels are indicated by „/“, separate labels by „//“. Author's remarks and comments are found in square brackets. [p] - the preceding data were printed; [hw] - the same were hand-written. Measurements of body parts and corresponding abbreviations used in the text are as follows:

- AL antenae length;
DVH dorso-ventral height - maximal dorso-ventral height of body;
EL elytral length - measured from the anterior margin of the scutellum to the posterior margin of the elytra;
EW elytral width - maximal width of both elytra combined;
HL length of head - measured from apex of clypeus to neck constriction;
HW width of head - maximal width of head (including eyes);

MPL	length of last maxillar palpomere;
MPW	width of last maxillar palpomere;
PL	pronotal length - length of pronotum measured along mid-line;
PW1	pronotal width 1 - width of anterior margin of pronotum;
PW2	pronotal width 2 - maximal width of pronotum;
PW3	pronotal width 3 - minimal width of pronotum;
PW4	pronotal width 4 - width of posterior margin of pronotum;
TL	total length - measured from the apex of left mandible (mandibles opened) to the apex of left elytron.

TAXONOMY

Brachinus fukienensis sp. n.

(Figs 1-4, 21, 27)

Type material. Holotype (♂) labelled: „China, SW Fujian, 28.iv.-24.vii. / GUANG ZHAI SHAN / 25°42'N 116°47'E, 450-480 m / 2006 [p, white label] // HOLOTYPE / Brachinus fukienensis / sp. n. / det. Jan Hrdlička, 2009 [p, red label]. Paratypes: (1 ♀ no. 1), the same data as holotype; (1 ♂, 1 ♀ no. 2, 3) labelled: „China, W Fujian, 26.iv.-24.vii. / LINYING stone forest / 26°03'N 117°19'E, 275 m / 2006 [p, white label]. Holotype is deposited in collection National Museum of Prague, paratypes in author's collection.

Description of the male holotype. Habitus (Fig. 21). A large sized *Brachinus* (TL 13.13 mm); 2.48 times longer than wide (TL/EW). Body convex (TL/DVH 3.50). Body black. Mandibles, labrum, clypeus, gula, prosternal projection, central part II-VIII abdominal ventrites, antennomere 5-11 and tarsi brown. Maxillary and labial palpi, mentum, coxae, trochanters, mesothorax and metathorax yellow-brown. Antennomere 1-4, femora and tibiae yellow-red.

Head longer than wide (HL/HW 1.04), narrower than pronotum (HW/PW2 0.98). Eyes large. Head shiny, frontal furrows and neck finely and sparsely irregularly punctate and pubescent by short setae. Mandibles in side-view with plurisetose scrobe. Antennae long, narrow (TL/AL 1.53). Ultimate article of maxillary palpus truncate apically (MPL/MPW 3.26).

Pronotum (Fig. 27) strongly transverse (PL/PW2 0.90). PL 2.33 mm, PW1 1.95 mm, PW2 (at the end of second ninth of pronotum) 2.58 mm, PW3 (at the end of seventh ninth of pronotum) 1.70 mm, PW4 1.80 mm. Disc convex, shiny, wrinkled, finely and sparsely regularly punctate, without pubescence. Posterior angles of pronotum acute. Episterna of prothorax smooth and shiny.

Elytra 1.47 times longer than wide (EL/EW). Maximal width at the beginning of last third. Elytral disc dull, with microsculpture (polygonal meshes), convex. Humeri distinct. Each elytron with 7 distinct, rounded and bare costae. Elytra sparsely pubescent by short yellow setae (between costae). Posterior margin of elytra with membranous fringe of very short setae (approximately 0.015 mm).

Male genitalia (Figs 1-4). Aedeagus long and narrow. Apical half flattish dorso-ventrally. Flattish part is at angle of about 10° to plane perpendicular to aedeagus axis. The tip is obliquely truncate, with round corners.

Variability. TL 12.30-13.13 (aver. 12.71) mm. PL/PW2 0.90-0.95 (aver. 0.93). EL/EW 1.44-1.51 (aver. 1.47).

Differential diagnosis. The new species belongs to the *melandolitus* species group (*B. bigutticeps* Chaudoir, 1876, *B. dawnaensis* Kirschenhofer, 2003, *B. melancholicus* (Schmidt-Göbel, 1846), *B. merkli* Kirschenhofer, 2003, *B. orestes* Kirschenhofer, 2003, *B. papua* Darlington, 1968, *B. philippinensis* Tian et Deuve, 2007, *B. piceus* Chaudoir, 1876, *B. solidipalpis* Tian et Deuve, 2007 and *B. stygius* Andrewes, 1933). *B. fukienensis* differs from other by shape of pronotum and aedeagus.

Distribution. China: Fukien province.

Bionomy. Locality Guang Zhai Shan: moderately dry limestone range, forest with *Pinus* sp., 450-480 m. Locality Linying: moderately dry stone forest with *Pinus* sp., 275 m. Collected in pitfall traps with bait.

Name derivation. Patronymic, after the type locality Fukien province (China).

***Brachinus hubeiensis* sp. n.**

(Figs 5-8, 22, 28)

Type material. Holotype (♂) labelled: „China, W Hubei, 26.v.-10.vii. / BADONG N env. / 31.1N 110.4E, stream valley / 2003 [p, white label] // HOLOTYPE / Brachinus hubeiensis / sp. n. / det. Jan Hrdlička, 2009 [p, red label]. Holotype is deposited in author's collection.

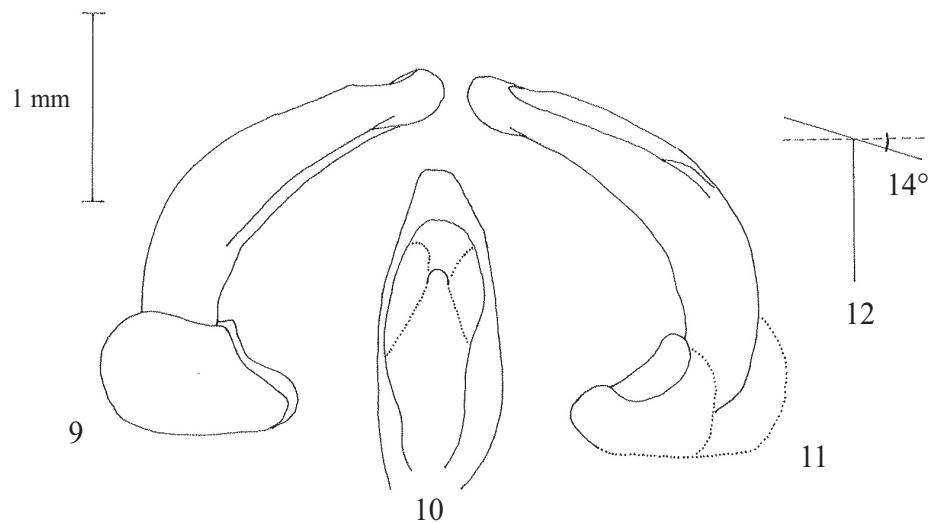
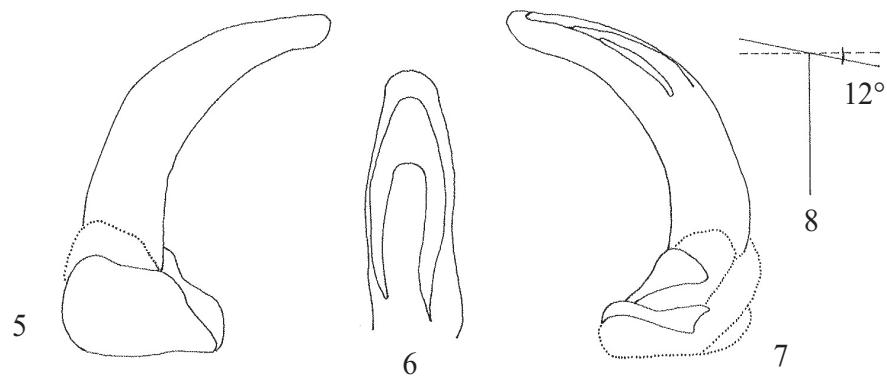
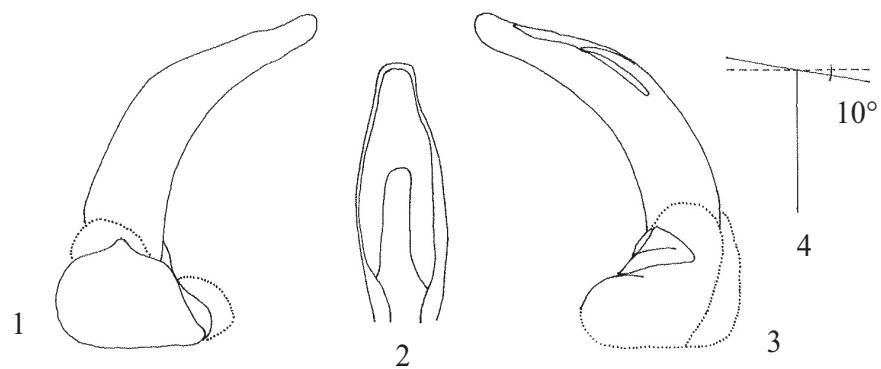
Description of the male holotype. Habitus (Fig. 22). A large sized *Brachinus* (TL 14.15 mm); 2.50 times longer than wide (TL/EW). Body convex (TL/DVH 3.63). Coloration and surface structure the same as by *Brachinus fukienensis* sp. n.

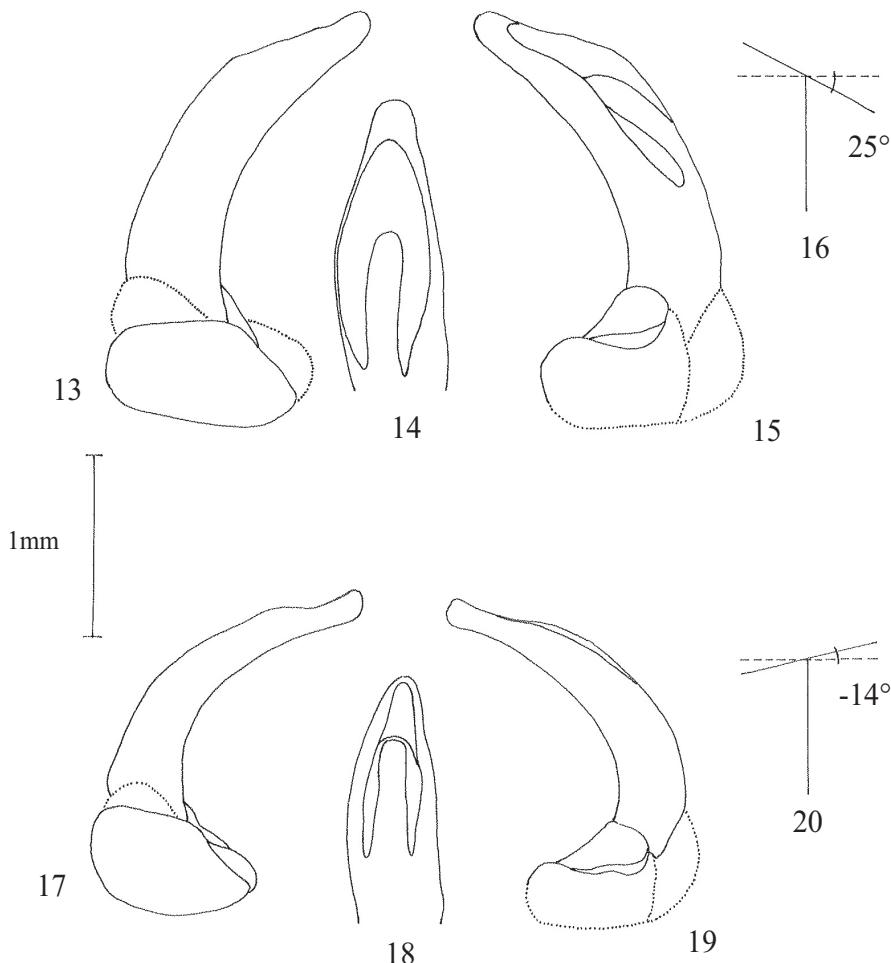
Head longer than wide (HL/HW 1.03), narrower than pronotum (HW/PW2 0.96). Eyes large. Antennae long, narrow (TL/AL 1.59). Ultimate article of maxillary palpus truncate apically (MPL/MPW 3.00).

Pronotum (Fig. 28) strongly transverse (PL/PW2 0.87). PL 2.40 mm, PW1 2.08 mm, PW2 (at the end of second ninth of pronotum) 2.75 mm, PW3 (at the end of seventh ninth of pronotum) 1.88 mm, PW4 1.93 mm.

Elytra 1.55 times longer than wide (EL/EW). Maximal width at the end of fifth ninth third. Posterior margin of elytra with membranous fringe of very short setae (approximately 0.015 mm).

Male genitalia (Figs 5-8). Aedeagus long and narrow. Apical half flattish dorso-ventrally. Flattish part is at angle of about 12° to plane perpendicular to aedeagus axis. The tip is rounded.





Figs 1-20. Aedeagus. 1-4- *Brachinus fukienensis* sp. n.; 5-8- *Brachinus hubeiensis* sp. n.; 9-12- *B. turnai* sp. n.; 13-16- *B. bolovenensis* sp. n.; 17-20- *B. pelengensis* sp. n. 1, 3, 5, 7, 9, 11, 13, 15, 17, 19- lateral view; 2, 6, 10, 14, 18- dorsal view; 4, 8, 12, 16, 20- deflection of the apical flattened part from the plane perpendicular to the aedeagus axis - frontal view.

Differential diagnosis. *Brachinus hubeiensis* sp. n. is very similar to *Brachinus fukienensis* sp. n. described above. *Brachinus hubeiensis* differs by shape of elytra and aedeagus. Elytra longer, sides of elytra more parallel.

Distribution. China: Hubei province.

Bionomy. Dry hills with bush, with sporadic *Pinus* sp. Collected in pitfall traps with bait.

Name derivation. Patronymic, after the type locality Hubei province (China).



Brachinus turnai sp. n.

(Figs 9-12, 23, 29)

Type material. Holotype (♂) labelled: „China, Fujian c., 22.vi.-13.vii. / Ziyungdongshan, NW slopes / 25°46'N 117°20'E, 900-1100 m / 2007 [p, white label] // HOLOTYPE / *Brachinus turnai* / sp. n. / det. Jan Hrdlička, 2009 [p, red label]. Paratypes: (10 ♀♀ no. 1-10): the same data as holotype; (1 ♂ and 3 ♀♀ no. 11-14) labelled: „China, Fujian c., 20.vi.-12.vii. / Tianbaoyanshan, NW slopes / 25°58'N 117°31'E, 1100 m / 2007 [p, white label]. Holotype is deposited in collection National Museum of Prague, paratypes in author's collection.

Description of the male holotype. Habitus (Fig. 23). A large sized *Brachinus* (TL 14.58 mm); 2.51 times longer than wide (TL/EW). Body convex (TL/DVH 3.47). Body black-brown. Mandibles, labrum, clypeus, two spots behind eyes, maxillary and labial palpi, antennae, coxae, trochanters, tibiae and tarsi brown. Femora yellow.

Head longer than wide (HL/HW 1.09), wider than pronotum (HW/PW2 1.05). Eyes large. Head shiny, finely and sparsely irregularly punctate and pubescent by short setae. Mandibles in side-view with plurisetose scrobe. Antennae long, narrow (TL/AL 1.32). Ultimate article of maxillary palpus truncate apically (MPL/MPW 3.32).

Pronotum (Fig. 29) a little longer than wide (PL/PW2 1.03). PL 2.70 mm, PW1 2.08 mm, PW2 (at the end of first fifth of pronotum) 2.63 mm, PW3 (at the beginning of last fifth of pronotum) 1.83 mm, PW4 2.08 mm. Disc convex, dull, little wrinkled, coarsely and densely regularly punctate and densely pubescent by short yellow setae. Posterior angles of pronotum acute. Episterna of prothorax dull, regularly punctate and pubescent.

Elytra 1.47 times longer than wide (EL/EW). Maximal width at the beginning of last third. Elytral disc dull, with microsculpture (polygonal meshes), rather flat. Humeri absent. Costae slightly distinct. Elytra densely regularly punctate and densely pubescent by short yellow setae. Posterior margin of elytra with membranous fringe of short setae (approximately 0.05 mm).

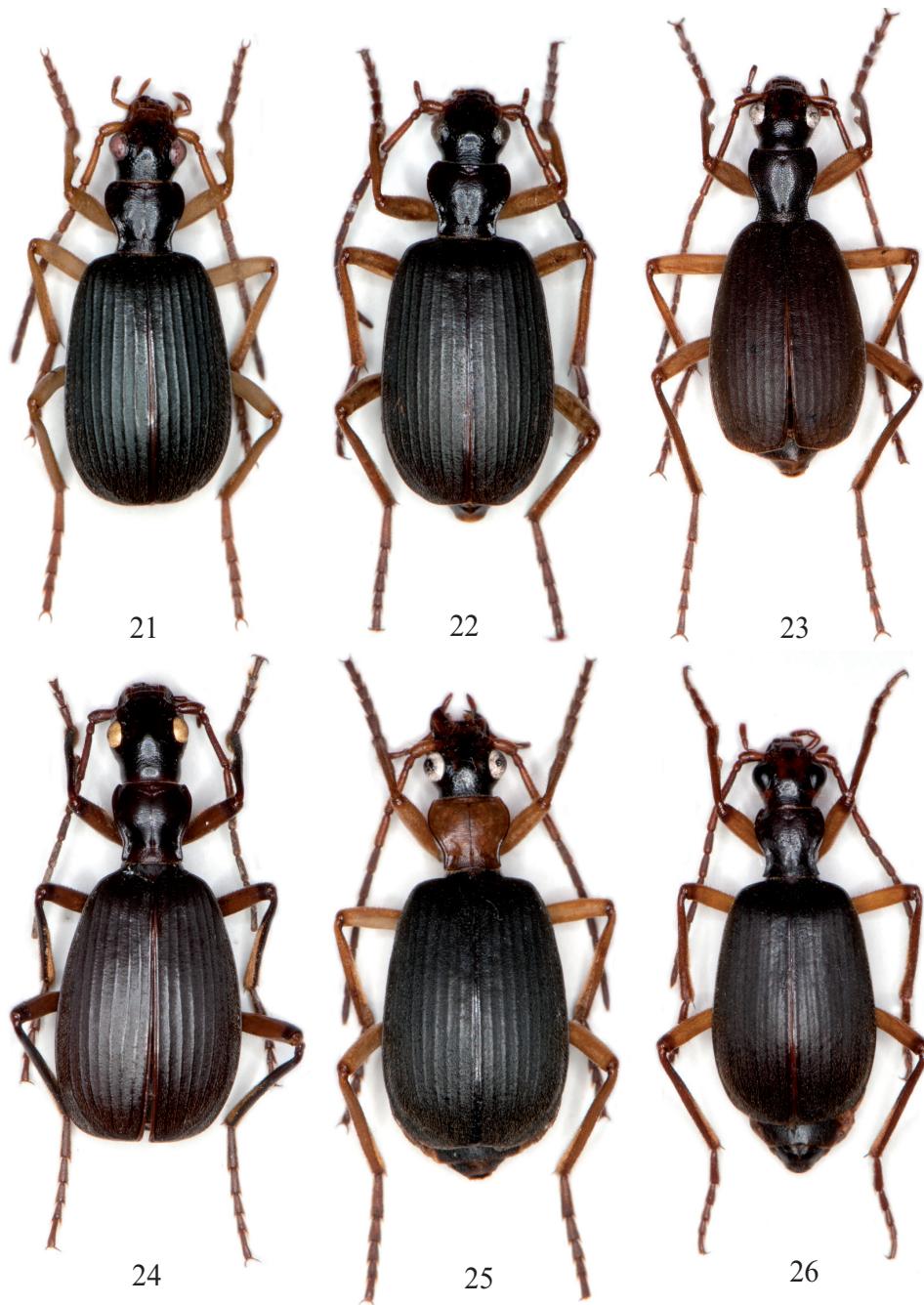
Male genitalia (Figs 9-12). Aedeagus long and robust. Apical two thirds flattish dorso-ventrally. Flattish part is at angle of about 18° to plane perpendicular to aedeagus axis. The tip is obliquely truncate, with round corners.

Variability. TL 14.58-17.40 (aver. 16.24) mm. PL/PW2 0.99-1.12 (aver. 1.05). EL/EW 1.37-1.60 (aver. 1.47).

Differential diagnosis. *Brachinus turnai* sp. n. is similar to *Brachinus magyari* Jedlička, 1960 from Korea. *Brachinus turnai* sp. n. is large (aver. 16.24 mm versus 14.00 mm), sides of elytra more rounded, without humeri. Pronotum more cordiform.

Distribution. China: Fukien province.

Bionomy. Locality Ziyungdongshan: primary humid leafy forest with *Castanopsis chinensis* and bamboo, 900-1100 m. Locality Tianbaoyanshan: primary mixed forest with *Castanopsis chinensis*, *Pinus* sp. and bamboo, 1100 m. Collected in pitfall traps with bait.



Figs 21-26. Holotypes: 21- *Brachinus fukienensis* sp. n.; 22- *B. hubeiensis* sp. n.; 23- *B. turnai* sp. n.; 24- *B. cychroides* sp. n.; 25- *B. bolovenensis* sp. n.; 26- *B. pelengensis* sp. n.



Name derivation. This species is dedicated to Jaroslav Turna (Czech Republic), a well-known specialist in Tenebrionidae.

***Brachinus cychroides* sp. n.**

(Figs 24, 30)

Type material. Holotype (♀) labelled: „Vietnam / Tam Dao / 25.v.1991 / M. Dudycha lgt. [p, white label] // HOLOTYPE / *Brachinus cychroides* / sp. n. / det. Jan Hrdlička, 2009 [p, red label]. Paratype: (1 ♀): the same data as holotype. Holotype is deposited in collection National Museum of Prague, paratype in author's collection.

Description of the female holotype. Habitus (Fig. 24). A large sized *Brachinus* (TL 18.33 mm); 2.44 times longer its width (TL/EW). Body flat (TL/DVH 4.07). Body black. Mandibles, labrum, clypeus, two spots behind eyes, maxillary and labial palpi, antennae, coxae, trochanters and tarsi brown. Femora yellow-brown.

Head longer than wide (HL/HW 1.15), wider than pronotum (HW/PW2 1.04). Eyes flat. Head dull, frontal furrows and neck finely and sparsely irregularly punctate and pubescent by short setae. Mandibles in side-view with plurisetose scrobe. Antennae long, narrow. Lacking two last antennomeres. Ultimate article of maxillary palpus truncate apically (MPL/MPW 3.57).

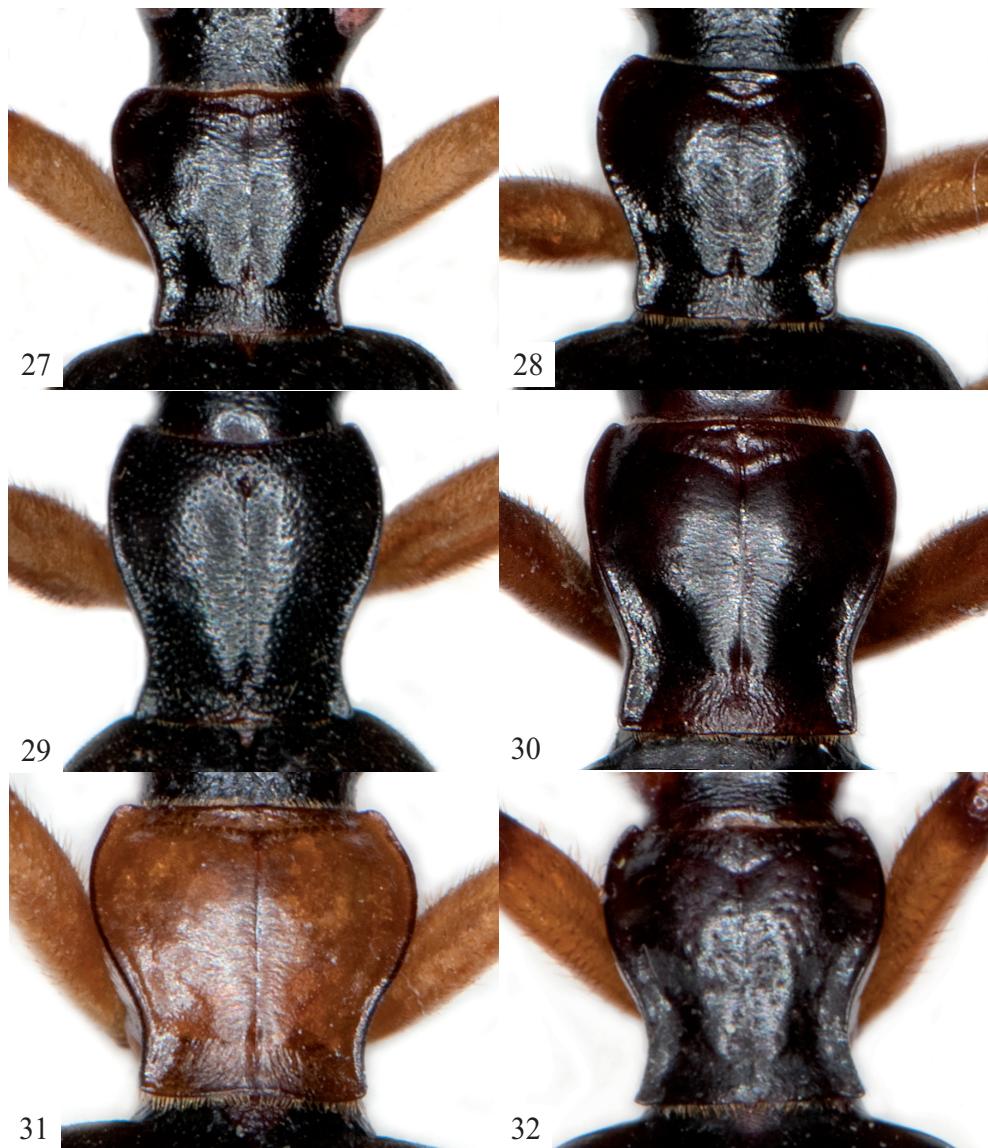
Pronotum (Fig. 30) a little longer than wide (PL/PW2 1.01). PL 3.28 mm, PW1 2.60 mm, PW2 (at the end of third thirteenth quarter of pronotum) 3.25 mm, PW3 (at the end of tenth thirteenth of pronotum) 2.30 mm, PW4 2.48 mm. Disc convex, dull, anterior and posterior margins wrinkled, without pubescence. Posterior angles of pronotum rectangular. Episterna of prothorax smooth and shiny.

Elytra 1.44 times longer than wide (EL/EW). Maximal width at the end of seventh eleventh. Elytral disc dull, with microsculpture (polygonal meshes), flat. Humeri rounded. Each elytron with 7 distinct, rounded and bare costae. Elytra sparsely pubescent by short yellow setae (between costae). Posterior margin of elytra with membranous fringe of very short setae (approximately 0.015 mm).

Variability. TL 18.00-18.33 (aver. 18.17) mm. PL/PW2 1.00-1.01 (aver. 1.005). EL/EW 1.38-1.44 (aver. 1.41).

Differential diagnosis. The new species belongs to the *melandolius* species group (*B. bigutticeps* Chaudoir, 1876, *B. dawnaensis* Kirschenhofer, 2003, *B. melancholicus* (Schmidt-Göbel, 1846), *B. merkli* Kirschenhofer, 2003, *B. orestes* Kirschenhofer, 2003, *B. papua* Darlington, 1968, *B. philippinensis* Tian et Deuve, 2007, *B. piceus* Chaudoir, 1876, *B. solidipalpis* Tian et Deuve, 2007 and *B. stygius* Andrewes, 1933). *B. cychroides* differs from others by shape of body - long head with pronotum versus short and oval elytra.

Distribution. N. Vietnam: Tonkin region, Tam Dao.



Figs 27-32. Pronotum. 27- *Brachinus fukienensis* sp. n.; 28- *B. hubeiensis* sp. n.; 29- *B. turnai* sp. n.; 30- *B. cychroides* sp. n.; 31- *B. holovenensis* sp. n.; 32- *B. pelengensis* sp. n.

Bionomy. Unknown.

Name derivation. Derived from the shape of body, reminding of the genus *Cychrus* (Carabidae).

***Brachinus bolovenensis* sp. n.**
(Figs 13-16, 25, 31)

Type material. Holotype (♂) labelled: „LAOS SOUTH / BOLOVEN PLATEAU / BAN ITOU / 23-27.v.2007 / B. MAKOVSKÝ Lgt. [p, white label] // HOLOTYPE / *Brachinus bolovenensis* / sp. n. / det. Jan Hrdlička, 2009 [p, red label]. Holotype is deposited in author's collection.

Description of the male holotype. Habitus (Fig. 25). A large sized *Brachinus* (TL 16.83 mm); 2.44 times longer than wide (TL/EW). Body convex (TL/DVH 3.37). Body black. Pronotum, scutellum, maxillary and labial palpi, antennae, episterna of prothorax, episterna of mesothorax, episterna of metathorax, coxae, trochanters and tibiae rusty red. Mandibles, labrum, clypeus, two spots behind eyes and tarsi brown. Femora yellow.

Head narrower than wide (HL/HW 0.98), wider than pronotum (HW/PW2 1.02). Eyes large. Head shiny, frontal furrows and neck finely and sparsely irregularly punctate and pubescent by long setae. Mandibles in side-view with plurisetose scrobe. Antennae long, narrow (TL/AL 1.46). Last article of maxillary palpus truncate apically (MPL/MPW 3.39).

Pronotum (Fig. 31) strongly transverse (PL/PW2 0.89). PL 2.78 mm, PW1 2.33 mm, PW2 (at the end of third eleventh of pronotum) 3.13 mm, PW3 (at the end of eighth eleventh of pronotum) 2.10 mm, PW4 2.18 mm. Disc convex, dull, anterior and posterior margin wrinkled, without pubescence. Posterior angles of pronotum rectangular. Episterna of prothorax smooth and shiny.

Elytra 1.49 times longer than wide (EL/EW). Maximal width at the end of third fifth. Elytral disc dull, with microsculpture (polygonal meshes), convex. Humeri distinct. Each elytron with 7 distinct, rounded and bare costae. Elytra sparsely pubescent by short yellow setae (between costae). Posterior margin of elytra with membranous fringe of very short setae (approximately 0.03 mm).

Male genitalia (Figs 13-16). Aedeagus long and robust. Apical third flattish dorso-ventrally. Flattish part is at angle of about 25° to plane perpendicular to aedeagus axis. The tip is rounded.

Differential diagnosis. The new species belongs to the *melandolius* species group (*B. bigutticeps* Chaudoir, 1876, *B. dawnaensis* Kirschenhofer, 2003, *B. melancholicus* (Schmidt-Göbel, 1846), *B. merkli* Kirschenhofer, 2003, *B. orestes* Kirschenhofer, 2003, *B. papua* Darlington, 1968, *B. philippinensis* Tian et Deuve, 2007, *B. piceus* Chaudoir, 1876, *B. solidipalpis* Tian et Deuve, 2007 and *B. stygius* Andrewes, 1933). *B. bolovenensis* sp. n. differs from others by coloration of pronotum and shape of aedeagus.

Distribution. S. Laos: Boloven plateau.

Bionomy. Unknown.

Name derivation. Patronymic, after the type locality Boloven plateau (Laos).

***Brachinus pelengensis* sp. n.**

(Figs 17-20, 26, 32)

Type material. Holotype (δ) labelled: „INDONESIA - / PELENG ISL., vii.2007 / lgt. local collectors [p, white label] // HOLOTYPE / Brachinus pelengensis / sp. n. / det. Jan Hrdlička, 2009 [p, red label]. Holotype is deposited in author's collection.

Description of the male holotype. Habitus (Fig. 26). A large sized *Brachinus* (TL 14.96 mm); 2.41 times longer its width. Body convex (TL/DVH 3.52). Body black-brown. Labrum, clypeus, frons, tempora, maxillary and labial palpi, antennae, episterna of mesothorax, coxae, tibiae and tarsi brown. Trochanters and femora yellow.

Head longer than wide (HL/HW 1.03), wider than pronotum (HW/PW2 1.08). Eyes large. Head shiny, frontal furrows and neck finely and sparsely irregularly punctate and pubescent by long setae. Mandibles in side-view with plurisetose scrobe. Antennae long, narrow (TL/AL 1.50). Ultimate article of maxillary palpus truncate apically (MPL/MPW 2.77).

Pronotum (Fig. 32) slightly transverse (PL/PW2 0.98). PL 2.63 mm, PW1 2.05 mm, PW2 (at the end of third eleventh of pronotum) 2.68 mm, PW3 (at the end of eighth eleventh of pronotum) 1.88 mm, PW4 2.20 mm. Disc convex, shiny, little wrinkled, coarsely and sparsely regularly punctate and pubescent by long yellow setae. Posterior angles of pronotum strongly acute. Episterna of prothorax smooth and shiny.

Elytra 1.48 times longer than wide (EL/EW). Maximal width at the beginning of last third. Elytral disc dull, with microsculpture (polygonal meshes), convex. Humeri distinct. Costae slightly distinct. Elytra pubescent by short yellow setae and sporadic long setae. Posterior margin of elytra with membranous fringe of very short setae (approximately 0.015 mm).

Male genitalia (Figs 17-20). Aedeagus long and narrow. Apical half flattish dorso-ventrally. Flattish part is at angle of about -14° to plane perpendicular to aedeagus axis. The tip is rounded.

Differential diagnosis. The new species belongs to the *melandolius* species group (*B. bigutticeps* Chaudoir, 1876, *B. dawnaensis* Kirschenhofer, 2003, *B. melancholicus* (Schmidt-Göbel, 1846), *B. merkli* Kirschenhofer, 2003, *B. orestes* Kirschenhofer, 2003, *B. papua* Darlington, 1968, *B. philippinensis* Tian et Deuve, 2007, *B. piceus* Chaudoir, 1876, *B. solidipalpis* Tian et Deuve, 2007 and *B. stygius* Andrewes, 1933). *B. pelengensis* differs from others by coloration of body, by very long setae on dorsal side of body and by shape of aedeagus.

Distribution. Indonesia: Peleng Isl.

Bionomy. Unknown.

Name derivation. Patronymic, after the type locality Peleng Isl. (Indonesia).

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